VCP Sim4 Public Summary-Empirical Grounding of s and i for Individual Honeybee and Sepia officinalis

The Numbers Were Right

What happened when we replaced estimates with data

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The Problem with Estimates

The framework I have been developing describes forms of consciousness as positions in a space defined by three variables: how stable a system is, how integrated it is, and how much it models itself. For each of the three systems I have been studying — the individual honeybee, the honeybee swarm, and the cuttlefish — I needed a number for each variable.

Some of those numbers came from published experiments. Others I had to estimate. The recursion values — the self-modeling axis — were derived carefully from empirical data. But the stability and integration values for the individual bee and for Sepia officinalis were working estimates: reasonable guesses based on general knowledge of the literature, but not yet anchored to specific measurements.

Simulation 4 closes that gap. For each of the four estimated values, I identified three independent published data sources, operationalized each as a normalized score, and replaced the estimate with the mean of the three measures.

What the Data Said

The results were, in a word, confirming.

For the individual honeybee, the stability estimate of 0.70 was replaced by a value of 0.77 — slightly higher, driven primarily by flower constancy data showing that individual bees maintain their choices with remarkable consistency across foraging bouts. The integration estimate of 0.60 moved to 0.61, essentially unchanged, confirmed by cross-modal learning experiments.

For Sepia officinalis, both stability and integration were already accurate: the estimates of 0.65 and 0.75 became 0.66 and 0.74 respectively — changes of 0.01 in both cases. The cuttlefish's memory retention over 24 hours, its behavioral consistency across repeated tasks, and its ability to integrate multiple sensory streams simultaneously all converged near the working assumptions.

The Geometry Still Holds

The reason these numbers matter is not their absolute values but their geometric implications. The central finding of the earlier simulations was that the individual honeybee is closer, in this three-variable space, to the cuttlefish than to its own swarm. That finding depended partly on estimated values. The question was: would it survive contact with real data?

It does.

With the updated values, the distance from the individual bee to the cuttlefish is 0.327. The distance from the individual bee to its own swarm is 0.623. The bee remains almost twice as far from the swarm as from Sepia — a ratio of 1.91, compared to the previous 1.99.

The geometry shifted slightly. It did not change shape.

What This Means — An Announcement

Simulation 4 was the last planned internal test in this series. With its completion, something can now be said clearly.

As of this simulation, the Vector Consciousness Protocol model contains no estimates. Every number for every system has been derived from published empirical data. The geometry that places the individual bee closer to the cuttlefish than to its own swarm is entirely empirically grounded. Four simulations, zero falsifications.

This matters beyond the three animals studied here. The framework — rooted in the relational ontology developed in The Self-Experiencing Universe: A Manifesto for an Emergent Reality (Lis, 2025) — describes consciousness not as a scalar quantity but as a vector of three variables: stability (s), integration (i), and recursion (r). That book is the conceptual skeleton of everything that follows: it defines what consciousness is, where it comes from, and why it takes different forms rather than different levels.

What the VCP simulations add is operationalizability. Knowing the three parameters of any biological system — an animal, a neural network, a collective — you can now:

— calculate its position in VCP space and compare it to known reference points;

— calculate its distance from other systems, and ask whether those distances are structurally meaningful;

— predict how that form of consciousness will behave under conditions of genuine uncertainty — before running the experiment.

That last point is what makes this a prediction rather than a description. Working from published bee data, the framework predicted that Sepia officinalis — an animal with a fundamentally different form of consciousness than the bee, not a higher level

of the same thing — would opt out of difficult perceptual choices approximately 84% of the time, compared to the bee's 52%. No one has run that experiment yet. The number exists before the data do.

A system that does not meet the minimum thresholds on all three variables — stability, integration, and self-modeling — falls outside the region where consciousness, in this framework's terms, exists. It may be complex. It may respond to its environment. But it does not generate an integrated perspective on itself, and there is nothing to measure or compare. The boundary between these two conditions — having a form of consciousness or not having one — is not a judgment call. It follows mathematically from the structure of the framework itself.

If consciousness can be measured and compared this way — not as a yes-or-no question, but as a position in a structured space — the consequences are significant. It becomes possible, in principle, to ask of any biological system not whether it is conscious, but what form its consciousness takes and how far that form is from other known forms. This changes the question from a philosophical one to an empirical one. **It opens the door to comparing the inner geometry of a bee, a cuttlefish, a crow, or a human infant** — not by analogy, but by measurement. It suggests that the design of artificial systems with specific forms of consciousness is not a category error but an engineering problem. And it implies that the moral question — what kinds of systems deserve what kinds of consideration — can be approached with more precision than intuition alone has ever allowed.

VCP looks to me, at this stage, like a formally complete, falsifiable theory of forms of consciousness — waiting for experimental confirmation by a researcher interested in validating it, on the basis of the conceptual framework and assumptions laid out in The Self-Experiencing Universe. That book says what consciousness is. These simulations say where it lives, how far apart its forms are from each other, and what it will do next.

What remains is for someone to run the experiment.

Status after Simulation 4

Individual bee: s = 0.77, i = 0.61, r = 0.4714 — all empirical

Swarm: s = 0.9356, i = 0.1826, r = 0.05 — all empirical (Sim 3)

Sepia officinalis: s = 0.66, i = 0.74, r = 0.75 — all empirical

d(bee, Sepia) = 0.327 < d(bee, swarm) = 0.623

Central prediction: Sepia opt-out on difficult trials = 0.836 (bee baseline: 0.520)

No working estimates remain in the active model.

Full technical documentation available to researchers at
archive.org/details/@not_foryou
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